

Appl. No. 10/027,462  
Resp./Amdmt. dated Aug. 8, 2005  
Reply to Office Action of 05/13/2005

### REMARKS/ARGUMENTS

There are no amendments to the specification or drawings herein.

In the Claims, Claims 1-12 and 14-30 are pending. Claims 15-20 are allowed. Claims 1-6, 9-12, 21, 23, 25-27 and 30 are rejected and Claims 7, 8, 14, 22, 24, 28 and 29 are objected to. Reconsideration is respectfully requested.

Claims 1, 21 and 26 are amended hereinabove. Support for the amendments to Claims 1, 21 and 26 can be found at least in the respective claims, as previously presented. Claim 5 is amended hereinabove. Support for the amendment to Claim 5 is found at least in Claim 5, as originally filed. Claim 10 is amended hereinabove. Support for the amendment to Claim 10 is found at least in Claim 14, as originally filed. Claim 14 is amended to better correspond to amended Claim 10. No new matter is added. Consideration and entry of the amendments to Claims 1, 5, 10, 14, 21 and 26 are respectfully requested.

New Claims 31-35 are added. Support for new Claim 31 is found at least in Claims 5 and 7, as originally filed. Support for new Claim 32 is found at least in Claim 6, as originally filed. Support for new Claim 33 is found at least in Claim 8, as originally filed. Support for new Claim 34 is found at least in Claims 21 and 22, as previously presented. Support for new Claim 35 is found at least in Claims 21 and 24, as previously presented. No new matter is added. Consideration and entry of new Claims 31-35 are respectfully requested.

The Examiner rejected Claims 1-4, 5-9, 21-25 and 26-30 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. In particular, regarding base Claims 1, 5, 21 and 26, the Examiner contended, "[t]he specification does include the use of 'A: edge density ... or, A and B combined: both of an edge density and a comparison between an image of a typical object and the image of the object ...' (emphasis in original). The Examiner further contended that the 'specification does not appear to include the use of only B: a comparison between an image of a typical object and the image of the object created by the imaging system to determine an optimum focus position' (emphasis in original).

Applicant respectfully traverses the rejection under 35 U.S.C. 112, first paragraph, on the grounds that the specification, as filed, does include the use of 'only a comparison of images' as variously recited, in part, in base Claims 1, 5, 21 and 26,

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contrary to the Examiner's contention. For example, in Figure 3 and in Applicant's specification at Page 12, line 24, through Page 16, line 18, relied upon by the Examiner, Applicant discloses an embodiment of 'comparing' (i.e., method 200). As illustrated and described therein, method 200 comprises, "creating 210 a set of images of a typical object with the imaging system", "selecting 220 from the set of images an image called a reference image", "creating 230 an image of an object being imaged or under inspection", and "comparing 240 the image of the object being imaged to images in the set of images of the typical object".

As described in Applicant's specification, "comparing 240" may employ "[e]ssentially, any correlation algorithm that allows a relative comparison of a pair of images" (Applicant's specification, Page 15, lines 3-4). Additional discussion of comparing images is provided in Applicant's specification, Page 14, line 18, through Page 15, line 14. Similarly, "selecting 220" is disclosed as picking an image from a set of images "that is most nearly 'in focus' with respect to the region of interest of the object being imaged" (Applicant's specification, Page 13, lines 11-12). As such, contrary to the Examiner's contention, using 'comparing' is disclosed separately (e.g., comparing 240) from using edge densities. Specifically, "comparing 240" which does not employ edge densities is disclosed separately from "selecting 220" which may use edge densities.

Moreover, according to Applicant's specification at Page 13, lines 14-15, "[s]electing 220 ... may be accomplished manually or automatically". For example, as disclosed in Applicant's specification at Page 13, lines 15-18,

"The set of images may be viewed by an operator. The operator manually selects 220 a best or most focused image from the set to be the reference image for the region of interest. Alternatively, an automatic method of selecting an optimally focused reference image may be employed".

While in some embodiments of automatically "selecting 220", the image is selected by edge densities, such use is clearly not required according to Applicant's specification (e.g., selecting 220 manually). Thus, even when considering 'method 200' comprising at least both of 'selecting 220' and 'comparing 240', the method may be implemented without 'using edge densities'.

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Hence, the contrary to that contended by the Examiner, sufficient details are provided in the Applicant's specification to enable the skilled artisan to practice the invention without undue experimentation using only a comparison between an image of a typical object. Applicant respectfully requests the Examiner reconsider and withdraw the rejection of Claims 1-4, 5-9, 21-25 and 26-30 under 35 U.S.C. 112, first paragraph, for at least the reasons given hereinabove.

The Examiner rejected Claims 1-3, 5-6 and 10-12 under 35 U.S.C. 102(b) as being anticipated by Zwirn et al., U.S. Patent No. 4,789,898 (hereinafter 'Zwirn et al.'). Applicant respectfully traverses the rejection on the grounds that a *prima facie* case of anticipation cannot be established with respect Claims 1-3, 5-6 and 10-12. In particular, Applicant respectfully submits that amendments hereinabove to base claims 1, 5 and 10 render moot the Examiner's rejection thereof. In light of the aforementioned amendments, Zwirn et al. fail to disclose, explicitly or implicitly, "each element of the claim under consideration" (*W.L. Gore & Associates v. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983)) as required by the Federal Circuit for *prima facie* anticipation under 35 U.S.C. 102.

For example, the Examiner "chose only edge density to determine an optimum focus position to reject the claim 1". Applicant has amended Claim 1 effectively removing the "only edge density" alternative, thereby rendering the Examiner's choice moot. Moreover, Zwirn et al. fail to disclose using *either a comparison* between an image of a typical object and an image of the object created by the imaging system *or an edge density* in an image of the object *and the comparison* to determine an optimum focus position", as recited in Applicant's Claim 1, as amended hereinabove. Similarly, Zwirn et al. do not disclose that recited in either of Claims 5 and 10, as amended hereinabove. In particular, Applicant removed "one or both of" from Claim 5, thereby rendering moot the Examiner's use of 'only edge density' "as per claims 1 and 2". Regarding Claim 10, Applicant incorporated a portion of that recited in Claim 14, as originally filed. Zwirn et al. at least fail to disclose "wherein the object is representative of a class of objects being imaged, the determined optimum focus position being a reference focus position for the representative object", as recited in amended Claim 10.

Claims 2 and 3 are dependent from and include all of the limitations of amended Claim 1. Claim 6 is dependent from and includes all of the limitations of amended

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Claim 5. Claims 11 and 12 are dependent from and include all of the limitations of amended Claim 10. By definition, Zwirn et al. also fail to disclose that recited in dependent Claims 2, 3, 6, 11 and 12 for at least the reasons set forth above for base Claims 1, 5 and 10. Applicant respectfully requests that the Examiner reconsider and withdraw the rejection under 35 U.S.C. 102(b) with respect to Zwirn et al. for at least a lack of support for *prima facie* anticipation of Claims 1-3, 5-6 and 10-12, as amended herein.

The Examiner rejected Claims 4 and 9 under 35 U.S.C. 103(a) as being unpatentable over Zwirn et al. further in view of prior art that the Examiner contended was admitted by Applicant. Applicant assumes herein that the Examiner intended to refer to 'Claim 9' instead of "Claim 6" on Page 9, second paragraph, of the present Office Action.

Applicant traverses the rejection on the grounds that the aforementioned amendments to base Claims 1 and 5 effectively render moot the Examiner's reasons for rejection of Claims 4 and 9. In particular, Claim 4 is dependent from and includes all of the limitations of base Claim 1 while Claim 9 is dependent from and includes all of the limitations of base Claim 5. In light of the amendments to the base claims, a *prima facie* case of obviousness with respect to Zwirn et al. further in view of contended admitted prior art cannot be established. For at least the reasons set forth above for amended base Claims 1 and 5, Zwirn et al. in combination with the contended admitted prior art at least do not teach or suggest *all* the claim limitations of rejected Claims 4 and 9, as required by the courts to support *prima facie* obviousness. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Hence, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of Claims 4 and 9 under 35 U.S.C. 103(a) for lack of support for *prima facie* obviousness.

The Examiner rejected Claims 21 and 23 under 35 U.S.C. 103(a) as being unpatentable over Zwirn et al. further in view of Onoguchi et al., U.S. Patent No. 6,067,164 (hereinafter 'Onoguchi et al.') on page 9, paragraph no. 9 of the Office Action. However, it appears that the Examiner intended to reject Claims 26 and 27 hereunder also (see Office Action, page 11, last paragraph, and page 12, first paragraph). While confusingly inconsistent, Applicant presumes this rejection applies to Claims 21, 23, 26 and 27.

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Applicant respectfully traverses the rejection on the grounds that a *prima facie* case of obviousness cannot be established in light of amendments to base Claims 21 and 26 hereinabove. In particular, neither Zwirn et al. nor Onoguchi et al., whether considered separately or together, disclose or suggest that recited in either of amended Claim 21 or amended Claim 26. For example, Zwirn et al. in combination with Onoguchi et al. at least fail to teach or suggest, "a controller that executes the computer program and controls the imaging subsystem, wherein the computer program comprises instructions that, when executed by the controller, implement using an image of the object created by the imaging system to determine an optimum focus position, the determination being *either* image comparison-based *or* edge density-based *and* image comparison-based", as recited in Applicant's Claim 21, as amended hereinabove (*emphasis added*). Similarly, Zwirn et al. in combination with Onoguchi et al. at least fail to teach or suggest, "a computer program executed by one or both of the controller or an external processor, the computer program comprising instructions that, when executed, implement *either* an image comparison of an image of the object created by the imaging system *or both of* an edge density determination *and* the image comparison to determine an optimum focus position for imaging the object", as recited in Applicant's Claim 26, as amended hereinabove (*emphasis added*).

Zwirn et al. in view of Onoguchi et al. at least fail to teach or suggest *all* the claim limitations, as required by the courts to support *prima facie* obviousness. See *In re Royka*, cited *supra*. Claim 23 is dependent from and includes all of the limitations of amended Claim 21. Claim 27 is dependent from and includes all of the limitations of amended Claim 26. A *prima facie* case of obviousness of Claims 23 and 27 is similarly lacking support since any claim depending from an independent claim that is nonobvious under 35 U.S.C. 103(a) is similarly non-obvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Hence, reconsideration and withdrawal of the rejection of Claims 21, 23, 26 and 27 under 35 U.S.C. 103(a) over Zwirn et al. in view of Onoguchi et al. are respectfully requested for lack of support for *prima facie* obviousness.

The Examiner rejected Claims 25 and 30 under 35 U.S.C. 103(a) as being unpatentable over Zwirn et al. further in view of Onoguchi et al. and further in view of Rooks et al., IEEE, June 5, 1999, "Development of an inspection process for ball-

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grid-array technology using scanned-beam x-ray laminography", (hereinafter 'Rooks et al.').

Claim 25 is dependent from and includes all of the limitations of amended base Claim 21 while Claim 30 is dependent from and includes all of the limitations of amended base Claim 26. Applicant traverses the rejection on the grounds that a *prima facie* case of obviousness cannot be established in light of the amendments to base Claims 21 and 26 hereinabove. In particular, as noted hereinabove with respect to the rejection of base Claims 21 and 26, Zwirn et al. in combination with Onoguchi et al. at least fail to teach all of the limitations of the amended base claims. Rooks et al. fail to add to that lacking in the combined teachings of Zwirn et al. and Onoguchi et al. As such, Zwirn et al. in view of Onoguchi et al. and further in view of Rooks et al. at least fail to teach all of the limitations of either amended base Claim 21 or amended base Claim 26, as required by the courts to establish *prima facie* obviousness. *In re Royka*, cited *supra*. Since Claims 25 and 30 are respectively dependent from base Claims 21 and 26, Zwirn et al. in view of Onoguchi et al. and further in view of Rooks et al. at least fail to teach all of the limitations of either Claims 25 or 30. Moreover, if a base claim is non-obvious under 35 U.S.C. 103(a) any claim that is dependent therefrom is similarly non-obvious. *In re Fine*, cited *supra*. Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 25 and 30 under 35 U.S.C. 103(a) for lack of support for *prima facie* obviousness.

Applicant appreciates the Examiner's allowance of Claims 15-20. Further, Applicant appreciates the Examiner's acknowledgement of the allowability of Claims 7, 8, 14, 22, 24, 28 and 29 if rewritten in independent form including all of the limitations of the base claim and any intervening claim. However, in light of the discussion hereinabove, Applicant respectfully declines to rewrite Claims 7, 8, 14, 22, 24, 28 and 29 at this time and requests reconsideration.

With respect to new Claims 31-35, Claim 31 should be considered allowable for at least the same reasons that the Examiner indicated that Claim 7 would be allowable if rewritten in independent form. Claim 32 should be considered allowable for being dependent from new Claim 31. Moreover, Claim 33 should be allowable for at least the same reasons that the Examiner indicated that Claim 8 would be allowable, since it is dependent from new Claim 31. Claims 34 and 35 should be considered allowable for at least the same reasons that the Examiner indicated that Claim 22 and 24,


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respectively, would be allowable if rewritten in independent form. It is respectfully submitted that none of the cited references disclose or suggest that recited in new Claims 31-35. Consideration and allowance of new Claims 31-35 are respectfully requested.

In summary, Claims 1-12 and 14-30 are pending. Claims 1-6, 9-12, 21, 23, 25-27 and 30 were rejected. Claims 15-20 were allowed and Claims 7, 8, 14, 22, 24, 28 and 29 were objected to. Claims 1, 5, 10, 14, 21 and 26 are amended herein and new Claims 31-35 are added. For the reasons detailed above, it is respectfully submitted that Claims 1-12, 14, 21-30 and 31-35 are in condition for allowance. It is respectfully requested that Claims 1-12, 14, 21-30 and 31-35 be allowed along with allowed Claims 15-20, and that the application be passed to issue at an early date.

Should the Examiner have any questions regarding the above, the Examiner is urged to contact the undersigned by telephone at the number given below or Robert T. Martin, Attorney for Applicant, Registration No. 32,426 at Agilent Technologies, Inc., telephone number (650) 485-7533.

Respectfully submitted,  
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#### CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on the date shown below.

  
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